

Observation of a correlated free four-neutron system

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We report on a recent experiment performed at the RIBF at RIKEN which lead to the observation of a correlated free four-neutron system [1]. The reaction ${}^6\text{He}(p, p\alpha)4n$ has been chosen to populate the four-neutron system. A well pronounced resonance-like structure at around 2 MeV has been observed. We will discuss the experimental method and the result, as well as future experimental perspectives to study multi-neutron systems.

[1] M. Duer, T. Aumann, R. Gernhäuser, V. Panin, S. Paschalis, D. Rossi et al., *Nature* **606** (2022) 678.